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Persistent Parvovirus B19 Related Anemia of Seven Years' Duration in an HIV-Infected Patient: Complete Remission Associated With Highly Active Antiretroviral Therapy

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A human immunodeficiency virus (HIV)-infected individual was first diagnosed with red blood cell aplasia due to B19 parvovirus infection in late 1989. Over the subsequent seven-year period, he received a total of 119 units of red blood cells (RBCs) and intravenous immunoglobulin every 2–3 weeks. In 1996 combination antiretroviral treatment with a protease inhibitor was initiated. He received four more units during the following two months and then required no more transfusions for the subsequent 24 months of follow-up. His CD4 count progressively increased and DNA polymerase chain reaction for parvovirus B19 became undetectable. Aggressive antiretroviral treatment may effectively diminish transfusion requirements among HIV-infected individuals with pure RBC aplasia resulting from parvovirus B19 infection. Am. J. Hematol. 60:164–166, 1999.

Key words: B-19 parvovirus; AIDS; HIV; anemia; pure red cell aplasia; protease inhibitor

INTRODUCTION

Since its discovery in 1975, parvovirus B19 has been shown to have a number of distinct clinical presentations [1]. Although it usually causes a benign self-limited illness, the virus infects and lyses red-cell progenitors, transiently interrupting the production of red cells [2]. In immunocompromised persons, including patients with human immunodeficiency virus (HIV) infection, chronic infection may occur and cause severe, persistent pure red cell aplasia and anemia [2–4]. Our patient was one of the first HIV-infected individuals with parvovirus B19 pure red blood cell (RBC) aplasia whose anemia was successfully managed with transfusions and intravenous immunoglobulin (IVIG) [4–6]. We report complete remission of B19-associated pure RBC aplasia after the patient was started on combination antiretroviral therapy that included the use of protease inhibitors.

CASE REPORT

A 35-year-old HIV-infected male who acquired HIV sexually, was first diagnosed with RBC aplasia due to B19 parvovirus infection in late 1989, when he was 26 years of age. At that time he presented with hematocrit of 14% and a CD4 count of 60 cells/ml. Erythropoietin (4,000 units subcutaneous twice a week) was unsuccessful in treating the anemia. During the first four years (from 1990 through 1994) he had a decrease of his transfusion requirements concurrent with prolonged and in-

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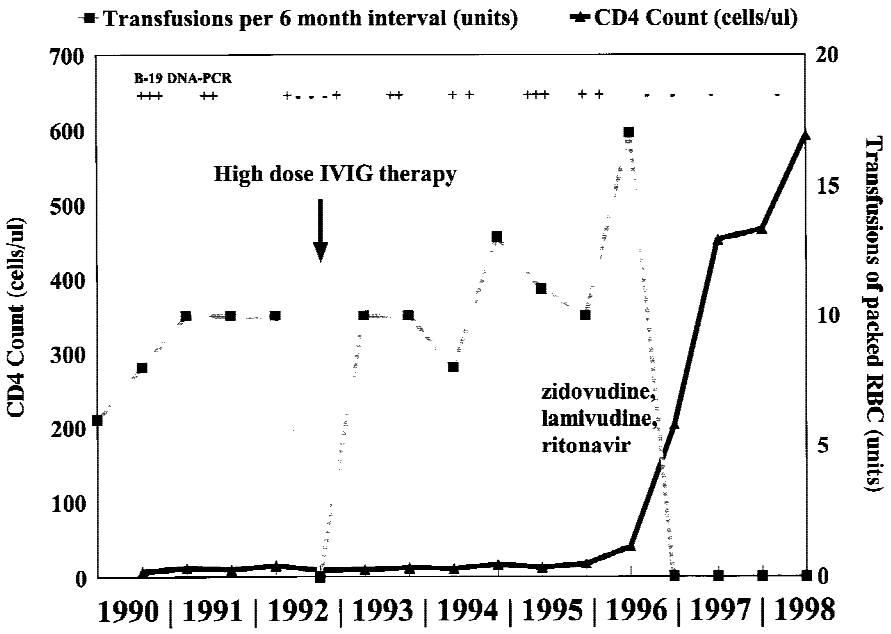

FIg. 1. Time course showing RBC transfusions and CD4 counts over a nine-year period. A transient decrease in transfusion requirements associated with the use of high-dose IVIG and a continuing response to aggressive antiretroviral therapy that included a protease inhibitor are noted.

tense treatment with IVIG (Fig. 1). He continued to be transfusion-dependent, despite therapy with IVIG (1.0 g/kg/dose). From 1989 to 1996, he received a total of 119 units of RBCs and was aggressively treated with IVIG (dosage varied from 0.4 to 1.1 g/kg/dose every 2–3 weeks). During this period his hematocrit ranged (with frequent transfusion treatment) from 20.5 to 39.5% and he was often reticulocytopenic with reticulocyte counts between 0 and 2.5%, that fell in parallel with hemoglobin.

In February 1996 he was started on combined antiretroviral treatment with zidovudine (200 mg three times daily), lamivudine (150 mg twice daily), and ritonavir (300 mg three times daily). He received four more units of packed RBCs during the first two months after the initiation of the highly active antiretroviral treatment. Over the following two years his HIV viral load became undetectable, his CD4 count gradually rose, and he was no longer transfusion-dependent (Fig. 1). In December 1996 saquinavir (200 mg twice daily) was added to the regimen. Treatment with IVIG was gradually decreased and for the last six months it has been discontinued. The patient is currently in excellent general health, his latest hematocrit was 45%, his viral load remains undetectable, and his CD4 count has increased from 3 cells/ml up to 592 cells/ml. We did not monitor quantitative polymerase chain reaction (PCR), but parvovirus B19 often by DNA-PCR testing during the six months prior to initiation of highly active antiretroviral treatment, and became negative two months after the therapy was started (Fig. 1).

DISCUSSION

Severe anemia caused by parvovirus B19 among HIV-infected individuals is limited to patients with very low CD4 counts [3]. In such patients, including ours, treatment with IVIG may be beneficial, but does not eradicate B19 infection. The potential complications, the very high cost, and lack of availability of IVIG makes this approach impractical [7].

Our report reinforces the significance of the host immune response in the persistence of B19 infection. In this case, as the CD4 count increased with combined antiretroviral treatment that included a protease inhibitor, the transfusion requirements diminished and the DNA-PCR for B19 became negative. Our experience with the patient described herein does not represent a unique biological phenomenon. Among patients with iatrogenic immunosuppression due to chemotherapy, cessation of the drug therapy may lead to resolution of anemia by allowing host antibody production and control of the viral infection [8]. Also, in a previously reported case of severe anemia due to parvovirus B19 in a patient with bone marrow transplantation, the DNA-PCR for parvovirus B19 and the associated anemia resolved with reconstruction of the bone marrow and the host immune system [9].

Our patient was able to tolerate the use of zidovudine, at a lower dose. Prior to the availability of protease inhibitors, anemia was a relative contraindication for the use of zidovudine. However, combination of zidovudine with a protease inhibitor, as in this case, is better tolerated among these patients [10].

Highly active antiretroviral treatment that includes a protease inhibitor may be effective and, possibly, even eliminate the need for transfusions and IVIG therapy among HIV-infected individuals who develop chronic anemia due to parvovirus B19.

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